6 JUL 1933

BULLETIN

OF THE

SOUTH INDIAN MEDICAL ASSOCIATION.

JUNE 1933.

The Out-patient Problem.

The demand of the public for treatment at the out-patient clinics of the various hospitals in this Presidency has been steadily incieasing within the last few years. According to the latest Triennial Report of the Surgeon-General, the total number of out-door patients treated during the years 1929, 1930 and 1931 was 11·6, 12 6 and 14 millions respectively. We are not at present concerned with the causes which have led to this phenomenal increase in the number of patients. But we entirely agree with the Surgeon-General when he says, " This increase is likely to proceed still further and perhaps still faster, and must give food for thought as to how and how far Government should meet this demand."

This increasing demand on the out-patient centres is not peculiar to this Presidency. Similar problems confront the managing authorities of the various hospitals in England. But the approach to the solution of the problem necessarily varies. There are at least two views held on this question. One set of people do not like to prevent patient from seeking the help of the out-patient departments of the general hospitals. Another school holds that not all of those who seek the out-patient treatment deserve admission, since many of them could be quite as efficiently looked after by the practitioners outside, Tney are therefore for restricting the out-patient departments to only such as are referred by practitioners outside as deserving of hospital advice.

Such methods of dealing with the out-patient problem are obviously inapplicable ro this country where most of those who seek the hospitals cannot generally afford to be treated by practitioners outside The number can certainly be reduced to a small extent by a rigorous application of the rule regarding the earning capacity of the patient. But since Government servants of all grades and pay have a claim to be attended to in these hospitals, a very vigorous application of this rule would only create unnecessary bitterness among the public without materially altering the volume of work in these places.

We have mentioned above the figures for the whole of the Presidency. This increase is also felt in the city hos-

pitals. The number of patients treated in the out-patient department of the Government General Hospital in 1926 was about 66,000, whereas in 1931 the number rose to over 92,000. Again in 1926, the average daily attendance was 515. But in the year 1931, the number increased to 753. This rapid increase in the number of patients presents the Government with three-fold problems. The accommodation in the various hospitals has to be greatly increased. The amount of drugs and dressings has to be increased, and more than these the medical staff has to be strengthened.

Even without this rapid increase in the number of patients it was the common opinion of all, Surgeon General, Ministers of Government, and the general public that the condition of medical relief in the out-patient departments was unsatisfactory. But as improvement meant larger buildings and more medical men, the problem has generally been left alone with minor improvements here and there. But in the hospitals which have been recently built, the out-patient departments have been housed in specially large and commodious structures—a testimony to the increasing demand on their resources. But even these newer hospitals have not generally been provided with any increase in the medical staff The opinion among the profession and the public is getting more decided on these drawbacks. Time was when the busy out-patient medical officer listened to a word or two of complaint from the patient, just felt his pulse and looked at his tongue, and straightaway prescribed for him a bottle of mixture or a packet of powders or some liniment. If occasionally the doctor asked a patient merely to lift his shirt and listened with a stethoscope at a spot or two, he felt that he had overhauled the patient very satisfactorily. The average patient now knows better. He has seen experienced and careful medical men listen patiently to the complaints of patients and the history of their illness and spend some time in examining them more fully before they begin to advise them as to the course of treatment. People are therefore not satisfied with the hurried and scant attention which is inevitable when a single medical man has to see over fifty patients in a little over two hours. When three or four doctors have to dispose of about five hundred patients in a couple of hours, conditions must certainly be very unsatisfactory indeed. Patients do not now believe in the capacity of doctors who have their prescriptions ready almost before the patient has actually stepped into their consulting rooms. In fact, people consider the so-called *inspired* doctor as a huge joke.

If out-patient departments are not to degenerate into centres of faith healing it is essential that they should be institutions where walking patients can get considered advice and treatment. To achieve this aim, these departments should be equipped with clinical laboratories which should be fully utilized and not merely used as ornamental appendages for showing people round or for mention in administration reports. Further, in other countries, the idea is growing that the out-patient departments should be available to the general practitioners of the locality for referring their patients for skilled advice from the consultants who work in these departments. If these various activities are to be pursued in the out-patient departments, one of the first requisites is that these places should be manned by a larger number of doctors. We trust that the Government would soon realize their responsibilities to the sick public and rectify these defects in the out-patient departments of their hospitals.

Human Considerations Lacking in Hospitals.

CALCUTTA ROTARY ADDRESS.

Hospital administration and organisation in Calcutta was the subject of discussion at a luncheon meeting of the Rotary Club held recently which was attended by many prominent doctors of the city connected with hospital management. Rotarian W.J. Herridge, Chairman of the Public Affairs Committee of the Rotary Club, opened the discussion.

Criticising the administration of hospitals in general Mr. W. J. Herridge pointed out the following serious defects:—

(1) Delay in the treatment of out door patients, due to lack of efficient management and paucity of medical staff.—This can be avoided by more business-like methods in marshalling the patients, a little more zeal on the part of medical officers and certain additions in subordinate staff.

(2) Reduction in the number of Dressers at the Hospitals and forcing patients to remove their own bandages, clean their own wounds and apply fresh bandages in many cases.—It seems hardly fair that the patients should be made to attend to their own dressings in this manner and this practice must, undoubtedly, lead to a reduction in the number of patients who can be given proper dressings in the normal hours allotted to out door patients. The number of Dressers was reduced recently, following certain retrenchment, and, if funds are not forthcoming to reinstate those reduced, it would appear possible for satisfactory arrangements to be made for all dressings to be done by students where available or trained nurses.

(3) Delay in admission of in-patients resulting in numerous serious cases remaining for considerable periods in the Admission Room even when requiring almost immediate treatment.—Provided beds are available, there need be little delay in the actual admission of serious cases into the hospitals. Arrangements could be made for this work to be speeded up but there seems to be some lack of co-ordination between the Admission Room Staff, House Surgeons and Resident Surgeons and the Staff of the Wards. Speeding up of the admission of patients should not involve additional expenditure.

PAYMENT OF GRATUITIES.

(4) Absence of proper attention to certain patients unless gratuities are paid to the Ward Orderlies.—I admit that this is a delicate subject but I am quite certain that I am on a sure ground when I say that patients do not enjoy ordinary facilities unless they pay gratuities to menial staff. The receipt by menials of any payment by way of gratuity should, I consider, be prohibited and severe action should be taken against persons found breaking this rule. Cases are not unknown where orderlies have declined to carry a patient into the hospital on a stretcher unless they first received a gratuity.

(5) Saving can be effected in hospital grants and that money devoted to employment of additional nurses.

(6) Doctors and Students in Hospitals do not appreciate that patients are still human beings. A little more gentleness of hand and sympathetic treatment would go a long way to make the patients more comfortable. I am afraid I must say that there is considerable callousness among doctors in practically all hospitals in this City especially where Indian patients are treated.

(7) Infectious diseases should be treated in hospitals situated far away

from ordinary hospitals and from very thickly populated residential parts. The present infectious diseases section in Campbell Hospital should, I consider, be removed to a new site, preferably right out of the City, but this will, of course, involve the opening of a new hospital and funds may not be available at present for this purpose but, if such hospital were established, there would be no necessity for the Corporation of Calcutta to provide for special accommodation during epidemics such as the recent epidemics of pox and cholera, which must over a period of years prove as expensive as a permanent structure.

(8) The whole of hospital administration and organisation requires to be thoroughly investigated into by a Special Committee appointed by Government when the whole subject can be examined and Calcutta, the Second City of the Empire, may then have proper hospital accommodation with up to date equipment. Even in England, the question of treatment of patients in out-door departments of hospitals has been the subject of a recent special enquiry completed and I recommend that this Report should be examined by the Committee I have proposed, to see if any of their recommendations could with advantage be adopted in this great city as these problems are not merely local ones but arises in every city, province and country in the world. Only 1,000 beds are normally available in this city to accommodate patients suffering from cholera and recently 60 additional beds were sanctioned. When small-pox is in epidemic form most of the patients have to be treated in their own homes because on the one hand there is about one bed available in the hospitals for every 100 patients and the treatment given to these unfortunate people consists of a few glasses of water and a little rice. Nursing is quite unknown and even Ward Orderlies will not go near the sufferers. The poor devils are left more or less to get better themselves or die. No wonder many poor people prefer to die in their homes instead of in the infectious diseases hospitals.

Let us use our influence to get these wrongs put right. Why could we not have, as in the Irish Free State, a series of Sweepstakes to raise funds forthwith to make this great City a safer and better place to live in ?

Mr. M. S. Davidson dealt with the following three points only :—

(1) The lamentable insufficiency of nurses, also menials and sweepers.

(2) The quality of the food supplied to patients, and

(3) The necessity for an increased medical staff in the Out-patients Department

Nursing Staff.

Mr. Davidson said : To take the question of nurses first, I will at once refer to the annual report on the Working of Hospitals under the Government of Bengal for 1929 (published in 1931). There is stated, and I quote the exact words : " Little improvement was effected in the nursing arrangements in any of the principal hospitals in Calcutta. In the Campbell Hospital the nursing system lags behind in comparison with the improvement effected in the administration of other department." It is to be regretted that in spite of the above censure made in the Government report the conditions have not only not improved but have actually deteriorated. There are cases where only about one nurse is actually available to look after fifty beds by day and double that number by night. Can anyone expect

in such conditions that proper attention would be paid to all patients? Most of the nurses are Anglo-Indians who receive a certain fixed salary. There are plenty of Indian nurses to be had if only some better balance was possible in the pay of the Indian nurses. The main reason why Indian nurses are at present largely unobtainable is due to the great difference in pay offered to them in comparison with Anglo-Indian nurses. I am reliably informed that the pay offered to Indian nurses is only about a third of what is paid to Anglo-Indian nurses. The information our Committee was able to obtain leads us to the conclusion that if the pay was more or less equalised, even on a reduced scale, plenty of Indian nurses would be obtainable to look after Indian patients and the new scales in themselves properly adjusted would allow of a large number of nurses to be employed for the same capital outlay.

As far as the food supplied to patients is concerned, all that need be said is that the vessels in which the food is given leave much to be desired, from the point of view of cleanliness, and that the food itself which probably sufficient in quantity is very deficient in quality. There is no real reason why cleanliness should not be enforced and the quality of the food improved. This would not involve any additional expense or cause any anxiety on the subject of finance.

My third point about the increase in the number of doctors required in the out-patients departments is particularly important. There is usually a great rush of patients that cannot possibly be dealt with in a proper manner by the number of medical officers now available. The consequence of this is that many patients have to wait periodically from about 8 a.m. to 11 a.m. or later, before they can possibly be attended to. The inadequacy of the nursing staff also comes into consideration here.

ECONOMY SUGGESTED.

I will now turn to the question of finance. Increased grants are absolutely necessary; but whether Government will be disposed to increase the present grants is questionable. We must, therefore, find means to make the existing grants give better results than or now obtainable. It is respectfully submitted that the system in force in the principal hospitals in this town is not economical, and these hard times anything that is not justified by the results must be cut out. There are 35 I. M. S. officers employed in the various hospitals and their pay and allowances absorb annually just over 8¾ lakhs. The present system of staffing the principal hospital with I. M. S. men cannot possibly be economical, since their pay is not based on actual services rendered but on rank. To quote the case of one hospital only where nine I. M. S. officers are on the visiting staff, their pay absorbs Rs. 1,82,400. Now if we refer to the hospitals in England we find that no such expenditure is incurred since beyond a couple of resident medical officers the whole of the medical staff is on a purely voluntary basis. The Committee is strongly in favour of introducing the honorary system in all hospitals. It would bring a greater economy into medical administration and would provide far greater benefits to patients without incurring additional financial liabilities. Where any of the medical officers appointed are required to teach students, they should be allowed a teaching fee say of Rs. 500 per month plus travelling allowance. I would draw attention to the fact that most of the medical officers now holding well-paid positions in the hospitals are also private practitioners and their income from private practice is probably

three to four times as much if not more than the pay they actually receive for their hospital services. Yet most of them attend hospital for about three hours a day on the average only, probably excepting Sundays. It might be mentioned here that any resident surgeon or physician in any hospital at Home receiving pay for his services is not allowed to have private practice. There may have been reasons years ago why the voluntary system was impossible, but conditions have radically changed since then and there are plenty of expert and experienced medical men in Calcutta, Indian and European, who would be ready and willing to render voluntary services if called upon.

BENEFIT OF HONORARY SYSTEM.

There are a number of hospitals in Calcutta now that do not receive a Government grant and are wholly staffed by medical men on an honorary basis. The substitution of the honorary system for the well-paid present system of medical attendance would serve in the one particular hospital referred to above to effect a saving of about Rs. 1,20,000 allowing for teaching fees on the basis indicated plus travelling allowance. You can well realise what improvements could be effected in other directions by such a saving yearly. It will interest you to know in this connection that the honorary system is in force in the Madras Presidency. The report of the Inspector-General of Civil Hospitals tendered to the Madras Government clearly states that the honorary system was working well. We may well ask, therefore, why we should lag so much behind in Bengal? I only wish in conclusion to strongly support the previous speaker's suggestion for a Committee of inquiry. Such an inquiry has become absolutely necessary and I firmly believe that the Committee, if appointed, would find many ways in which to remedy the evils now crying out for attention. It would also support the necessity for sweepstakes to raise the necessary finance. If this be done there will be probably no necessity at all for the Government to contribute anything. We have the example of Ireland before us to indicate how well sweepstakes can succeed in solving the financial difficulties of hospitals.

INCREASING NUMBER OF HOUSE SURGEONS.

My next point is that there is an urgent need of increasing the number of house surgeons and physicians in the out-patients department in almost all the hospitals of Calcutta. Sick patients are to wait for such a long time without any food till they can be attended to in their turn by the doctors. Due to economic depression there is a large increase in the number of patients seeking relief in the out-door departments but the number of doctors has not been proportionately increased.

If these reforms in hospitals are to be introduced money must be found out. If additional money be not forthcoming either from the Government purse or from the public, the only solution remaining is to introduce the honorary service system. There is one objection which may be raised against effecting such a change. It is contended in favour of the present system that the highly paid officers are kept in service as specialists for the benefit of the public and if they are not adequately paid, the public might be deprived of the privilege of consulting specialists. The objection is, however, not maintainable because there are many specialists in Calcutta now with European qualifications, who will be gladly willing to render honorary service if they are given the same status as paid officers. Besides, the system of frequent transfer from

one post to another having different kinds of duties can never stimulate specialisation in any particular subject. It is not uncommon that a Civil Surgeon is transferred to the post of the Professor of Surgeon or an Obstertician appointed to become the Professor of Surgery. A Professor of Chmistry is transferred to take the charge of the Serologist. A Professor of Physiology becomes after some time a Radiologist.

Another Defect.

There is another defect which also should not be overlooked. The paid officers have got many other duties to perform as Presidency Surgeon, Superrintendent of other hospitals, special officer for Customs Department, Post and Telegraph Departments besides their expensive private practice; additional allowances are, I suppose paid for the extra duties. When one is saddled with so many duties there is little possibility of doing justice to even one. There are good many well qualified surgeons and physicians in Calcutta now who can be entrusted with these duties with a small retaining fee. It cannot be said now that there will be any disturbance of efficiency by introducing this honorary system. It may not be out of place here to mention that even in the principal hospitals of Calcutta there are a number of Honorary Visiting Surgeons and Physicians who have been giving, I must say, very satisfactory account of their services. But, that the trial is a very shy one. In the King Edward Memorial Hospital of Bombay which is one of the best hospitals in India, if not the best, all the Visiting Surgeons and Physicians are honorary. I was struck by the efficient management when I went to visit that hospital.

Plea for Indian Nurses.

Dr. H. Ghosh, a member of the Rotary Club, in course of his speech said:—

It is undoubtedly a very important factor in the administration of hospitals to provide for adequate number of nurses for attending to patients admitted in the hospital. Failure to carry on exactly the instructions given by the physicians is a serious drawback. The question is however, complicated due to the fact that female nurse object to do certain duties such a putting a bed pan or urinal to a mal patient, hence a large number c sweepers and menials are to b employed thus entailing a large ex penditure. Even if Indian nurses ar employed the same difficulty will arise To obviate this difficulty male warı assistants can be employed in mal wards to attend to all the work required of a nurse. Trial has bee given in some of the hospitals o Calcutta with male ward assistant and I am reliably informed that th system is working very satisfactorily There is no dearth of young men witl the required qualification, who can b trained properly. If arrangement b made for their training these young men can be employed with a starting salary of Rs 30. This system will be much more economical than the present one. For female wards sufficient number of Indian nurses can be obtained if a good prospect is shown, is supplying a large number of trained nurses every year to many of the Bombay hospitals. Conditions were no doubt different a few years ago when very few Indian women with requisite qualifications could be obtained for training in nursing but the condition has changed since and if an equitable salary is promised, I believe there will be no difficulty in obtaining a sufficient number of them.

Swarajya, Madras.

The Essentials of a National Medical Service.

By Sir Henry Brackenbury,
LL.D., M.R.C.S.,

Chairman of Council of the British Medical Association.

Perhaps my first duty, in speaking to an audience largely of lay persons, is to describe the credentials of the British Medical Association, whose policy I am representing this afternoon, for pronouncing an opinion which is worthy of consideration by the public on a subject of national concern. The Association is a purely voluntary organization of the profession throughout the Empire, consisting of about 35,000 members. In close contact with it, machinery has been established whereby all insurance practitioners are represented, whether individually they belong to the Association or not. The Association is thus widely representative of the profession in this country.

The method whereby the Association formulates its opinions also deserves attention. Its opinions are not those of one of its committees or even of its Council, Before any opinion can be represented as that of the British Medical Association the proposal has to pass through the committee and Council stage to every Division of the Association throughout the country. The Divisions then instruct their representatives, and the decision is taken at an Annual Representative Meeting at which the representatives of all the Divisions come together for discussion. It is only after that process has been gone through, and at least a two-thirds majority secured in the Representative Meeting for any line of policy, that an opinion or scheme put forward can be said to be the opinion or scheme of the Association.

Further, I think we can point to the history of the British Medical Association in matters of this kind as in itself furnishing an important credential. During the hundred years of its existence the Association has been prominent in producing reforms in the direction of social welfare from the public health aspect. It was largely due to the initiative of the Association that public health legislation was started or any sort of Poor Law reform brought about. It was the Association also which initiated the movement for, and showed the necessity of, a school medical service.

On these grounds we have the right to claim that when we put forward in the name of the organized medical profession proposals concerned with public health, we are representing in fact the actual opinions of the great majority of the members of the profession, and, further, that (of course with the help of many other classes of persons) we can be relied upon to carry to a practical issue the proposals that we have formulated.

The Threefold Aim of Modern Medicine.

I have to survey a wide field, and I must be forgiven if I appear a little dogmatic instead of pursuing arguments, as I should like to do if there were time. There are certain things which we shall have to get into a proper focus at the beginning. First, the general outlook of modern medicine, and next the position of the general practitioner or family doctor in relation thereto. I shall develop these in postulating four essential features of any national medical or health service.

The first is that it must be a service which offers scope and opportunity for the achievement of the threefold aim of modern medicine: curative, preventive, constructive—in other words, to remedy departures from the normal, to avoid such departures, and also to

enhance the powers of the normal. It is important to recognize that these are not three separate aims and objects of medicine; they are a threefold aspect of medicine.

Popular fallacies die hard, and the fallacious contrast between curative and preventive medicine is no exception to the rule. No such contrast should be drawn, though it has been made only too often and with emphasis. There is a difference between prevention and cure, but the two are not opposites. At most they are merely different aspects of the same thing, and as such are inseparable. Every illness experienced induces precaution with regard to the future; every illness cured means the prevention of possible sequels. The results of any research, laboratory or clinical, may be both to heal and to avert. Every day the private practitioner helps by warning and advising as well as by treatment and skilful pilotage in illness, and every day the medical officer of health deals with individual cases of illness as well as undertaking measures of prevention. A logical contrast may be drawn between medical activities predominantly intended for the sick individual and those principally directed to the well-being of the community, but that is very far from establishing an antithesis between prevention and cure. The two things are inseparable; they are merely different aspects of the comprehensive aim of modern medicine. From the beginning the aim has been to cure the sick. During the last hundred years or so there has been added to that the definite and conscious aim of preventing people from becoming sick. Now we are beginning to bring within the picture something more than this—namely, the enhancement of the powers of the normal, carrying to the highest possible degree the spiritual, mental, and physical health of the individual.

No service can be a full and proper service unless it enables the whole of that aim to be envisaged and as far as possible achieved. We are not talking about a service which aims only at the cure of the individual person who is sick, but equally of a service which aims at the prevention of illness in the community and the individual, and ultimately at the carrying up to their fullest attainment all the powers of the personality, in which health is so vital a determinant.

Opportunities for Research.

The second essential is that any service of this kind should offer opportunities for research whether it be clinical (bedside) or laboratory. Without research, without fresh discovery and its application, there can be no advance in medicine or public health. Any national medical service which was regardless of research and did not offer scope for it would be unsatisfactory and incomplete. Research is often thought of as though it were in a narrow cell of its own and had to be carried out by a set of people almost hermetically sealed off from those who practise medicine day by day. That is another example of fallacy. The private practitioner, the public health medical officer, and the research worker form a triumvirate upon whose united work all medical progress depends. The question of their relative importance should never be raised, though their relation to one another within the limits of a unified service may be the subject of discussion. The idea of isolated and separate, even though friendly, spheres should be finally abandoned. The harmonious organization of their combined work within a single sphere should be sought, and that is one of the essential features of a national medical and health service.

The Position of the General Practitioner.

The remaining essentials are of a somewhat different order. The third is that the service should be based upon the provision of a family doctor or general practitioner for every individual in fundamental accordance with the present system of private practice. That I lay down very distinctly as being, in the view of the profession, one of the essentials of a national medical service. It may need some argument, for a certain small group within the profession, and a somewhat larger group among interested persons outside, would be inclined to deny that it was an essential. It assumes, to begin with that the present system of general practice through the family doctor is worth preserving.

What are the characteristic features of the conduct of family or general practice in this country? Patients may have individually a considerable amount of affection for their family doctor, but his position is not always conceived in the right way. He is too often regarded as somebody inferior to the specialist, or a representative of the lower ranks of the profession while the specialist represents the higher. The general practitioner, nevertheless, is an essential part of the profession, equal, professionally to any other part. He has gone through at least a six years' strenuous course of scientific and medical study. He is bound to have certain personal qualities, without which he cannot be a success, and without some of which his name would not continue to appear in the *Medical Register*. I should like to read certain extracts from what undisputed authorities have said about the general practitioner in his relation to the modern outlook in medicine. The first is Sir George Newman, who wrote :

"The foundation of a medical service is the medical practitioner. He is its pivot, its anchor, its instrument. If he is competent it has the first surety of success. If he is ineffective or ill equipped it must fail. His competency is not only his learning and knowledge, but his practical capacity, his clinical skill and experience, above all, his reasonableness, adaptability, common sense, tact, and imagination, firmly established and set in integrity and high character. These are individual virtues, and the medical practitioner is individualistic in upbringing and in purpose. He should safely hold the secrets of his client, and should have ample opportunity of rendering in full and personally the worth of his counsel to his patients. The social and individual relationship between doctor and patient is invaluable in the treatment of disease. His responsibility and his growth in individual work are of first-rate importance. Any change, whether effected from within or imposed from without, that restrains the liberty or lessens the responsibility of the medical man or hampers the free play of his intellectual activities, will be detrimental to the authority and usefulness of medicine, and prejudicial to the interests of public health and national welfare."

Another authority puts the position thus :

"The general practitioner cannot hope to be an expert in every department of medicine, but he should have a more comprehensive outlook than a man whose life is devoted to perfecting himself in the technique and minutiae of one subject. Both types of workers are indispensable in these days; they are complementary. The good general practitioner possesses powers of perspective in disease that are denied to the specialist, and he must remain not only

the most useful and encyclopaedic working unit of our profession, but also the member of it to whom, at least in the first instance, the public for its own good should turn for relief in sickness and guidance in maintaining health. The opportunities he has of seeing his patients for minor ailments as well as for serious illness; his acquaintance with their family history, habits of life, social circumstances, and many other personal details, learned only after long and confidential intercourse, give the general practitioner just that knowledge which enables him to treat the patient and not merely the disease."

I have still another quotation, this time from an American authority, who states that the general practitioner's knowledge of his patient and his surroundings, together with his experience in such intimate and personal contact with patients, makes him better qualified, not only to diagnose and treat, but also to direct the management of a case.

Probably most of those present believe their own doctors to be very sound, if not very clever persons, and the best doctors in the world *for them* though I know that the medical men in my audience are fully conscious of their own imperfections; it is perhaps the very knowledge of those imperfections which makes them such good doctors. But if you say that you could bring to me a number of practitioners who fall far short of the description which I have given you from authoritative sources, I would reply that for every such practitioner you produce I could produce at once twenty-five or thirty others who as nearly as possible fulfil the ideals I have just described.

Relationship between Doctor and Patient.

The third essential which I have just laid down is that a national medical service should be based upon the provision of a family doctor or general practitioner for every person, in essential accordance with the present system of private practice. The relationship between doctor and patient in ordinary practice is not primarily one of fees at all. The method whereby the doctor is paid for his services is not one of the essential characteristics of the proper relationship between the general practitioner and his patient. He may be paid quite privately, or through an insurance scheme, or in some other way. The essential relationship is based upon two things: first, that it is between doctor and patient primarily and predominently, and with no one else intervening, and, secondly, that it is a free relationship in every sense of the word.

If it is so important to have this intimate connection and association between doctor and patient in ordinary practice, that relationship must not be dominated by any other relationship whatever. The patient must feel that the doctor is looking after his interests, if not solely, at least primarily and predominantly. If there is any other interest which is in danger of being put before that relationship, then the traditions of medical practice as they have grown up in this country will not be preserved, and one of the essentials of a national medical service will not have been achieved. The relationship of a whole-time salaried official to his patient cannot be the same. The predominant relationship in these conditions is apt to be a relationship between the doctor and the committee which appoints him, or his medical superior in the service.

I am not drawing a contrast here between the bad and the good. Even an official doctor who had a very strong relationship with his superior officer or his appointing authority

would still, I have no doubt whatever, owing to the traditions of the profession, do the best he could for any patient in front of him. But this would not be the complete and primary and essential relationship which is postulated in the traditional way of carrying on the practice of medicine in this country, and which I submit is worth preserving. That, of course, could be developed further.

The second required condition is that the relationship shall be a free one ; free in two senses—free in that the doctor shall not be controlled in any way as to the character of the treatment which he proposes to give to his patient, that there shall be no orthodox authority, whether lay or medical, confining him to some limited or prescribed system within which he must deal with his patient, that the relationship between doctor and patient as far as treatment is concerned shall be a completely free relationship. This, of course, implies that the doctor has undergone the full course of training necessary to ensure a proper judgment.

The relationship must also be free in another sense. The patient must be at liberty to say, " You are not the doctor I want, and I will choose somebody else." It may be that in choosing their doctor for the first time, as, for example, when they set up a household of their own or move from one locality to another, lay persons are often guided by fortuitous and haphazard and not very solid reasons in their initial choice. The fact remains that at any moment, if they find that they have made an unsatisfactory choice, they are at liberty to go to somebody else. There must be free choise, within the limits of locality and so on, both of patient by doctor, and more especially of doctor by patient.

If we can preserve those things, that the relationship between doctor and patient shall be the predominant relationship always, and that it shall be a free relationship in the two respects I have named, we have secured the relationship between doctor and patient in the right way, on the right lines, and nothing else is of fundamental importance.

If anyone is going to dispute that, he will have to show me either that those two things in the relationship between doctor and patient are not of the very greatest advantage or that by some other system one can secure them equally well. I submit that the first of these propositions will scarcely be disputed. It will scarcely be said that it is not of the very greatest advantage, if not of the first importance, that the relationship as I have described it should hold.

A Complete Service.

My fouth essential is that the service should be a complete one. It must not merely provide the family general practitioner, it must give him and his patients all the additional help that they require in relation to their health. There must be a consultant and specialist service available through the practitioner for all those people who need the service. There must be all such auxiliary or ancillary services as pathological laboratories, facilities for X-ray examinations, massage service, midwifery service, and so on. There must be also, if the service is to be complete, institutional provision in hospitals and otherwise. We do not conceive a service as being complete or full and satisfactory unless it ensures, through the general practitioner as a rule, not only the family doctor service, but the consultant and specialist service, the additional service I have mentioned, and the institutional provision,

I will ask you for a moment to put institutional provision completely out of the picture. I will reintroduce it at a later stage in a slightly different perspective. I have enumerated these four essential provisions. If you will give me those four as essential I can argue with you, and possibly give way to you with regard to the relative importance of other features or other methods.

Other Desirable Features of a Service.

Some of my medical friends will say that I am stopping too soon, and that there are other essentials besides those mentioned which I ought to insist upon in expounding the subject to you. But what I am going to pass on to now are not the essentials of a national medical service, but important features which have to be considered and decided. The first of these relates to the clientele. Should the service be provided for everybody in the country, regardless of social status and need, or should it be confined to those persons who are unable to obtain the particular attention that they require in any other way? That, if you ask me to analyse it fundamentally, is not purely, perhaps not predominantly, a medical question. It is a question for the social reformer. It is obviously not a matter merely for medical decision or opinion as to whether a certain class of person shall be provided for, or whether, in establishing a national medical service, given the essentials already named, everybody shall be included.

I do not think that every doctor has thought this out. Why is the opinion of the medical profession on this important point emphatically in favour of providing this national medical service only for those who cannot provide what they require for themselves? Why is medical opinion not in favour of a universal clientele? I do not think that the attitude of the profession towards that is determined by monetary considerations. It is quite clear that, although perhaps they would not be easy to negotiate, there might be terms upon which the medical profession would be as adequately remunerated under some general national insurance scheme involving every citizen as under a partial scheme of the kind we have in view. It can be conceived that the terms might be made such that, so far as finance was concerned, it would be immaterial to the practitioner whether a certain proportion of the better-to-do community remained outside or came within the scheme. But the attitude of the medical profession is emphatically in favour of the non-universal provision. I think that that attitude has been determined by those two fundamentals in the relationship between the doctor and patient to which I have just referred. Under the purely private system those essentials are completely preserved. There can be no interference in that regard, and if the arguments are analysed I believe that it is really that which makes the profession so emphatic in favour of limiting the clientele of a nationally provided service. Beyond that, of course, the members of the medical profession have their views as tax payers. It is natural for some people to ask, not why the State does not provide everything for everybody, but why the State should put the whole body of the community to expenditure for the sake of people who can very well look after themselves. That is not a medical point of view, but it is a point of view which is widely held by medical men as citizens, as well as by other members of the community.

The Method of Provision and Administration of the Service.

The next important feature is the method of provision—whether it should

be through a compulsory contributory insurance system, such as we have at present, or entirely provided out of taxes or rates, or both. This, again, is not a medical question, though it is one upon which medical men and women as citizens have a right to form their own views. There can be no doubt as the emphatic opinion of the profession in favour of the compulsory insurance system. Under such a system we have found by experience that the two fundamental conditions of relationship just named are usually preserved. Such a system, we have found, does not conflict with maintenance of what we regard as essentials in the relationship between doctor and patient. Moreover, as we have already had experience of this system, it would be easier and cheaper, if we have to provide a national medical service, to provide it by the extension of the machinery which is at present in use rather than by scrapping the whole of that machinery and beginning again from a new foundation.

Thereare two questions in connection with the administration of the service which I should like to lay before you. The first has to do with the unification of the health services of the country. A long step has been taken under the Local Government Act, 1929, towards the unification of health services. Speaking broadly, we have now two different classes of administrative bodies concerned with public health and the national provision for sickness in this country: the county and county borough councils, which administer not merely public health as previously considered, but all the medical activities which come within the Poor Law; and the Insurance Committees, which, with only a very loose connection with the other authorities, administer the national health insurance system. We are extremely anxious to avoid a complete clash between the two sets of authorities as to the proper method of administering a united national medical service. The British Medical Association has been out for years for the unification of administration, and we want to find some means by which those who administer an extended and improved national health insurance service shall be brought into close association with—or shall, if possible, be made an integral part of—the machinery which is responsible for public health and Poor Law administration. We have no antagonism towards Insurance Committees or public health and public assistance committees, but we should like to have some system by which the administration would be unified, so that all the provision which the nation made for the health of the community under a national service would be under the one administration. I believe that it would be possible to have a committee of a county or county borough council charged with giving advice and administering these matters in somewhat the same relationship to the constituting council as education committees now bear, and that it would be possible to bring the national health insurance scheme in its extended form within the purview of such a committee, provided that that committee was of the same composite character (not by any means having the same proportions) as Insurance Committees now possess. But that is a matter of administration which I have not put among the essentials; it is a matter for amicable discussion with a view to arriving at a useful decision between those who represent the Insurance Committees and those who represent the public health committees, with, I hope, the medical profession also. If we could get throughont the country the conferences to which Sir William Hart has referred I think this would not prove an insoluble problem, and we need not assume that we are

always going to be confronted with Insurance Committees claiming one thing on the one hand and county councils and county borough councils claiming the opposite thing on the other.

With regard to administration, there is another aspect about which I cannot speak quite in the same terms, because we hold that in these questions of administration, though they are not medical questions, the medical profession is intimately concerned, and therefore in all these questions of methods of administration of a national service the medical profession should be consulted, should be represented in some degree upon the authorities, and should be trusted as completely as possible with reference to matters of internal professional discipline. I do not think there will be any serious disposition not to make these concessions. That is why I have not put the position of medical provision with regard to administration as one of the four essentials of a national service, though it is, we believe, necessary to the good administration of a national service.

Experiments and Adaptations.

I will only mention to you one or two experiments which are being made at the persent moment, and which we want local authorities to regard in a sympathetic spirit in the absence of any possibility of the early establishment of a complete national service. There are rapidly increasing throughout the country public medical services for the dependants of insured persons and persons of like class, established by the medical practitioners of the locality themselves, and run by them. That is useful experiment which will help us when we come to establish a national service of that kind. There are also being set up panels of consultants and specialists who have expressed themselves willing to see persons of those classes connected with recognized organizations for a very modified fee. These are experiments under the auspices of the British Medical Association. An experiment which we much want local authorities to try is to inaugurate a system of free choice in domiciliary practice for those who come under public assistance. The traditional method of providing medical attendance under public assistance has been by means of the part-time doctor appointed for certain districts. We have no quarrel with that. There is much worse way of proceeding, and we can conceive a better way. The worse way is the appointment of a whole-time doctor to do domiciliary work for poor people. We think that is wrong for several reasons. The better way is to provide medical attendance for these persons in exactly the same way in which it is provided for other persons, letting them have their choice among the doctors of the neighbourhood who are willing to do this work, not appointing a certain practitioner to be the "poor man's doctor." The experiment has been tried successfully in certain urban and rural areas, and there are many advantages to the patient, the public, and the profession if that method of free choice can be adopted. It may be said that it will not be easy of administration, and that it will be expensive; but it has been found to be in fact quite soomth in working, and in some of the authorities in whose areas it has been tried it has proved cheaper than the usual method, and, I believe, in none more expensive.

Institutional Provision: The Staff Fund.

A second experiment which we commend to the sympathetic attention of authorities and which has, in fact, been suggested to them by the Ministry of Health itself, relates to the maternity service. A considerable number

of ante-natal clinics have been set up, and are no doubt in most instances doing good work, especially on the educational side. But they have definite disadvantages, and it is doubtful whether they will ever prove a satisfactory substitute for the careful supervision of the mother by her own midwife and doctor. Public authorities may now make provision for such supervision by general practitioners the patient's own home. It is manifest that it is advantageous for such ante-natal supervision to be exercised by the person who is liable to attend the woman at the time of her confinement. For the effective working of such an arrangement there must be sanction by the authority and real co-operation between the general practitioners of the area and the medical officer of health. Such a scheme will apply also to post-natal examination, and it can be made very effective for all concerned. We must now bring hospitals into their place in the picture. Institutional provision cannot be given in exactly the same way by a compulsory insurance scheme. Traditionally hospitals have been provided by the charitable public or the Poor Law authorities. The Royal Commission on National Health Insurance and the British Medical Association's own committee on insurance tried to bring institutional provision within the common insurance system, and both came to the conclusion, largely for historic reasons, but partly also because the insurance risk was so varied, that it was impossible to do so. It is very difficult acturially to arrive at a common figure for the whole population.

A complete service must include institutional provision. Such provision is becoming increasingly less a provision by the charitable public for persons who cannot pay anything than a provision for the public on a more or less self-supporting basis. Contribution in one form or another are being made by or on behalf of patients in hospital for the services they receive. In view of this development it is clearly not the right thing to suggest that everything in the hospital service should pass away from the voluntary basis except the doctor. "Maintenance" in hospitals means paying the grocer, the coal merchant, and all other persons who supply their services or goods for the hospital's benefit. In private life there are people, I know, who say that the doctor should be the last to be paid, because he is a good-natured fellow and will not mind waiting. But in hospitals, at any rate, there is no reason why the doctor should be the only person not to be paid, or the last to move from the old voluntary charitable basis on to the more or less self-supporting basis. Therefore we believe that one of the features of the modern hospital as a piece of machinery in the national health service is that the services of the medical and surgical staff of the hospitals should be recognized financially in some form or other.

We advocate at present the recognition of these services by what we call a staff fund. It would be fair, in our opinion, that all contributions to the hospital, except purely charitable donations, should be subject to the allocation of a certain proportion to a pool to be at the disposal of the medical and surgical staff. We have named 20 per cent as a reasonable contribution to such a staff fund. In many instances, as at present advised, I have no doubt that the staff of the hospital would meet together and say they would return the money to the hospital as a voluntary contribution but it would be their fund, for disposal at their pleasure. They might decide to devote it to adding to the amenities of the hospital, but they would be quite at liberty to distribute the fund amongst themselves in accordance

with what they believe to be the proprotionate services they had given. We do not rigidly insist upon 20 per cent nor even at the moment upon a staff fund method, but we believe the time is rapidly coming when such funds must be established if an injustice to the medical and surgical staff of the hospital is to be avoided, I make no apology for putting forward the economic position of the staffs of hospitals and of practitioners generally. Whatever altruistic motives may be in operation, yet practitioners have to provide for themselves and their families out of their professional earnings.

It should be noted as an important fact that the payment of the medical and surgical staffs, in some such way has been recently endorsed by an influential committee of representatives of the British Medical Association and the British Hospitals Association under the chairmanship of Lord Linlithgow. Their report and conclusions should be carefully considered by all members of the governing bodies or boards of management of hospitals.

Facilities for General Practitioners in Hospitals.

The other essential with regard to hospital provision is that there should be facilities for the general family practitioner to see his own patients and have the responsibility for them in hospital conditions. There are many cases in which the hospital patient does not require specialist treatment, but in which treatment can be equally well, or even better, given by his own family practitioner. At the same time, his home circumstances, for some reason or other, make it very difficult to carry out such attendance with satisfaction. He requires hospital accommodation, nursing, and treatment accessories such as are only or most conveniently available in hospital, in order that his doctor may continue to attend him with a reasonable prospect of comfort and success.

We are trying to make it one of our conditions of hospital provision that in every area accommodation should be provided for the treatment of patients by general practitioners. We do not prescribe how that should be done. It can be done by the establishment or extension of a particular type of cottage hospital which is staffed by general practitioners who serve the patients of that area. Special home hospitals may be established, because even cottage hospitals are apt nowadays to be filled up with surgical cases, and it is not always the surgical cases of which we are thinking. In a voluntary or council hospital, again, a ward, or a certain number of beds, could be set apart for that class of case to which the general practitioners shall have access, of course under proper administrative supervision. But, somehow or other, in some institution or other in a district, there should be provision by which the general practitioner can treat and have the responsibility for treating his own patients in hospital conditions when the conditions outside are not such as in the interests of the patient ought to be tolerated.

The Private Practitioner and Public Services.

In conclusion, I want to place before you two or three ideas which at present we should like to see carried into effect. We believe that the public health service is being a less good thing than it might be if it is encouraged in the appointment of increasing numbers of medical officials devoted to particular duties and circumscribed by the attachment to special services. We believe that wherever possible it is in the interests of the authority, and of the public—and also of the profession, in that it keeps the profession up to the

mark—that, wherever possible, a local authority should perform its duties to certain classes of individuals, or in respect to certain diseases, by employing the practising local profession, whether special or general, of the area with which that local authority is concerned.

To employ whole-time specialists, who would therefore take relatively narrow appointments, is mistaken from the point of view of the interests of medicine and of public health. The questions of administration have to be considered, but there are no insuperable administrative difficulties in the way of what we considered to be the better method. We do not say that it can always be done, or that the conditions are the same everywhere, but we do say that wherever possible, as an alternative to the other method of appointing whole-time segregated servants to do special work, the authority should utilize the experience and ability of the practising profession of the area so far as that profession is willing to place the services which it is capable of performing at the disposal of the authority.

My next suggestion is that the practising profession should be brought into close relationship with, or should in fact be considered as an integral part of the public health service of the locality. This has not been so, I am sorry to say, in some cases, owing perhaps to the unconsidered views of the authority, or to the personality of a particular medical officer of health of other official, or to difficulties among the personalities which constitute the practising profession in the area. But the practitioners of the area ought not to be considered as representing a separate service walled off from the other. Even to work in friendly harmony is not sufficient—there ought to be a unified responsibility. The practitioners have an exceptional knowledge of the bad conditions of external environment, of common practices which are opposed to personal hygiene, and of what is for the moment the prevalent disease. Such knowledge is first hand knowledge of the practising profession in the area, and it ought to be considered as part of their duty, in relationship to the public health of that area, to place all such knowledge necessarily at the disposal of the medical officer of health. The public health committee and those responsible for public health in that area, and therefore the community represented by the public health committee and its medical officers, should look to the practising profession in the area as part of their public health service, a part which would be invited to contribute and encouraged to help in all those matters in respect to which they had first-hand knowledge.

The Relation of the General Practitioner to other Agencies.

We have also to consider the relationship of the medical profession as a whole to other classes of persons in the public health service. The new conception of the relations inherent in the modern medical outlook embraces the relation of the medical profession to a large body of other workers, such as midwives, school nurses, health visitors of various kinds. These have been regarded as subordinates to the medical officer of health, responsible to him and his chief colleagues in the service alone, and they have tended to become, or to look upon themselves as, rivals to the general practitioner in certain restricted spheres. In the service of the nature now required they would be as much helpers to the family practitioners as assistants to an administrative superior. They would perform exactly such functions as are most needed to make

the practitioner's preventive duties less harassing and more effective.

A similar relationship should be established between the practitioners of an area and the hospital services of the area. They should not be considered as separate departments sealed off from one another, or as having some obstruction between them. The practitioners of an area should be considered an essential part of a unified hospital service, and on this point I will read two extracts bearing on the matter. The first is from a paper which was read in the Section of Medical Sociology at the Centenary Meeting of the British Medical Association last July, the author being Dr. C. O. Hawthorne, who was introducing the subject of "Hospital provision as a social service." He said:

"There are other possible relations not yet fully recognized between private practitioner of medicine and hospitals that may be commended in the public interest as well as in the interest of patients and of scientific medicine. Where there is at present separation or detachment there might well be co operation, so that instead of standing outside the hospital organization, the local profession might be enlisted as an active part of its clinical machinery."

My other quotation is from the recent report of the King Edward's Hospital Fund for London on out-patient services. It refers to co-operation between hospitals and general practitioners, and runs as follows:

"The development of the consultative side of an out-patient department, whatever form it might take,, and whatever proportion it might bear to the other activities of the department, would necessarily involve more and more of this kind of co-operation between the hospital and general practitioners. Its advocates claim that this would be one of its great advantages. The general practitioner would benefit by being brought into more frequent touch with visiting staff and with the latest improvements in medical science. The visiting staff would not approach the patient as if the occasional visits to hospital were the only kind of medical attention he received and as if his dossier in the hospital registry, contained the whole of his medical history, but would take into account the family doctor as part of the environment affecting his past, present, and future condition. . . ."

To establish that relationship both in regard to the public health and the hospital service and thewhole of the practising profession of the area is, I submit, a thing we might cultivate and achieve almost at once without waiting for the establishment of a national medical service.

Finally, I hope you will not say that this is all vague idealism. I believe that these are practical proposals, and the profession of is opinion that these ideas could be put into effect. We ask the members of authoritative bodies to take these things into careful consideration, to regard them as the considered opinion of the medical profession, to give them their proper weight with reference to the whole subject of provision for public health and during the breathing space necessitated by this period of economy, to let us come together in order to see how far our ideas harmonize on these matters, so that we shall be prepared, when a scheme is brought forward, to get it on right lines. We have also to prevent, during this interval, things being done piecemeal here and there which would obstruct the wide view of the service which I think we are all agreed to take—*British Medical Journal* (4-3-33).

BULLETIN

OF THE

SOUTH INDIAN MEDICAL ASSOCIATION

JUNE 1933.

From a Cardiac Clinic *

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The cases that one sees in a Cardiac Clinic may be broadly divided into two classes.

(1) Those which have been diagnosed as Cardiacs.

(2) Those which are referred for an opinion as to whether they are really cases of heart disease.

Among the first group come some for directions as to future guidance but very few come for a confirmation of the diagnosis as all these people are firmly convinced that they are cases of heart disease. An esteemed colleague of mine recently expressed that he considered 'all patients whose urine reduced copper as diabetics till proved otherwise.' My view is that no person should be considered a cardiac even though symptoms referable to the heart are present till all other possibilities are explored and disposed of. Cabot, the distinguished American cardiologist, summarising his study of over 1,900 cases of 'diagnosed' heart disease in which he correlated the clinical findings and post-mortem findings states that most heart disease is imaginary.' He further asserts that a major portion of a cardiologist's practice consists in *undiagnosing* diagnosed heart disease. The importance of deciding as to whether a patient is a true cardiac or otherwise is obvious. The lay person reads of sudden deaths due to 'heart failure.' As such to him 'heart disease' becomes synonymous with sudden death; and especially to the nervous or introspective individual it lays the foundation of an anxiety neurosis and chronic invalidism. Once the idea of heart disease is established, every minor manifestation would be attributed to chronic heart disease and no amount of argument or even convincing proof would enable him to disbelieve his cardiac condition and he would be living in perpetual anxiety as to his impending doom.

The basis on which cardiac disease is diagnosed lie on certain objective and subjective symptoms and I shall deal briefly with some of them.

Murmurs.—A murmur is taken as a common diagnostic sign of valvular disease. The best heard and the most common ones are those in the apical region or the base of the heart. The apical systolic murmur is the most abused one. One has not to go far to find healthy young men rejected from public service or even studentships solely on an apical systolic murmur. The importance of this murmur as diagnostic of heart disease received its death blow during the last Great War. In many cases with a persistent systolic murmur post mortem findings have shown perfectly healthy valves whilst in other cases with absence of a murmur gross damage to the valves has been found. Sir Thomas Lewis in his researches on the cardiac condition of many recruits and soldiers says that men with systolic murmurs were in a great majority of cases able to stand the strain of active service quite as well as those without this sign subject to their not presenting any, other signs of heart disease. In his

* Address before the Andhra Medical Conference, 1933.

observations there was very little difference in the after histories of 70 recruits with systolic murmur but showing no other sign of heart disease and 90 controls who had no murmur. I like here to mention the case of a student, aged 18, diagnosed as a case of mitral regurgitation on the basis of an apical systolic murmur in 1926. He was the champion athlete of his school, a keen footballer, played daily 2 to 3 sets of tennis and took part in the rowing contests. He had no subjective sign relating to heart disease—no dyspnoea, no pain, no palpitation—and was ignorant of his condition till he was examined for a physical fitness certificate. He was advised to give up his activities, lead a sedentary life and warned of the dire consequences of exertion and exercise. I saw him soon after that. He had no cyanosis, no increased pulse rate, no dyspnoea even on exertion and the heart boundaries were normal to a normal athlete. The only sign available was a systolic apical murmur. The first and second sounds were otherwise normal. On the basis of these negative findings I assured him that he was free from heart disease and permitted him to resume his old activities and lead his ordinary life. To-day he is a Mechanical Engineer doing hard work and when I saw him again in February 1933 his heart was normal in size and other findings though the murmur is still present.

Another common type of apical murmur is cardio-respiratory in character. It is systolic in time and varies in intensity with certain phases of respiration. The difficulty arises only when it remains audible even when the patient holds his breath as happens in some cases.

The late Sir James Mackenzie said that the introduction of the stethoscope has not only hampered the progress of knowledge of heart affections but has done more harm than good. Sainsbury does not even concede that these murmurs have any valvular relation at all and holds that they are not intracardiac in origin. His view is that the murmurs are produced in the pericardial chamber and are due to whorls set up in the pericardial fluid. Murmurs had a greater importance in the old days than now as the methods of examination available in those days were restricted. With improved facilities that exist now, *viz.*, orthoradiogram, electro cardiograph, improved and easy methods of estimating metabolic rate and other biochemical findings, diagnosis of heart disease solely on a murmur is, to say it mildly, hardly justifiable.

Tachycardia is another symptom to be considered. Is it intrinsic or extrinsic in origin or is it a combination of both. If it is intrinsic definite myocardial disease has to be conceded, but if it is extrinsic the case is not one of heart disease. Many myocardial conditions (inflammatory, toxic, arterio-sclerotic) are associated with tachycardia. In these cases definite changes relating to the heart may be observed. The point to be considered is the relation between the force of the beat as compared with the rate. If there is myocardial damage a definite loss in force is found, though if only slight damage is present one has to be satisfied with 'no increase in the force,' of the beat. The apex beat is shifted. It may be outwards or downwards depending on whether hypertrophy or dilatation is present. The first sound is relatively weak and sometimes a murmur is present. Lack of force compared to the rate of beat is important. Tachycardia in such cases may be considered as intrinsic. In other cases the physical signs are slight, when a neurosis may be suspected and the tachycardia diagnosed as extrinsic in origin. With a rate of 100-120, regular, and slowing when a deep breath is taken vagus influence must

be thought of. The beat is increased in force, pulse becomes more vigorous and bounding. It is sharp. The blood pressure is slightly raised. With this type the tachycardia is not due to any intrinsic damage in the heart. This phasic variation is present as a result of sinus arrhythmia and in pronounced cases may give rise to dizziness or fainting and vitiate the perspective. Tachycardia of myocardial origin does not show any reduction with deep respiration.

The patient should be kept at rest and observed. The rate is to be recorded during sleep. Tachycardia of nervous origin shows marked reduction during sleep or when attention is diverted and the patient is at ease. In myocarditis the rate remains up. This test is especially useful in the case of neurotics and children. Tachycardia in growing young adults does not matter at all. It is part of the growing phase and is found generally in thin lanky flat-chested subjects during adolescence. The only abnormality is the increase in rate. The force of the beat is increased and should help in diagnosis. Controlled exercise and adequate nourishment is all that is required. In anxiety neurosis tachycardia is most common. It is also present when there is any toxic factor and a certain amount of difficulty may be experienced in differentiation. This is especially true in the early stages of thyrotoxicosis. The tremor is deceptive; thyroid does not show any enlargement. In anxiety neurosis the sleeping rate is appreciably reduced. In thyrotoxicosis the rate is high even during sleep. Sweating is present, loss of weight and an increased metabolic rate are found. An increased pulse pressure with a definite diastolic drop is of great value in diagnosis of early hyperthyroidism. The thyroid show a firmness even before any appreciable increase in size can be detected. Focal sepsis *e.g.*, in the tonsils, sinuses and elsewhere and extraneous toxins like coffee and tobacco cause tachycardia. In one case under my care the rate returned to normal only on the removal of a septic gall bladder. Early tuberculosis should also be considered. Pallor, lowered blood pressure, rise in temperature especially after exercise are positive signs in tuberculosis. I am only dealing here with tachycardias presenting difficulty in diagnosis and not to obvious conditions like auricular fibrillation or flutter. It may be stated as a general rule that "provided the rhythm is regular and the rate is highly susceptible to changes in posture or emotional disturbances and if there be no other evidence of organic lesion tachycardia by itself should not be made the basis of a diagnosis of heart disease." The significance in the importance of tachycardia may be measured by the exercise response of the patient. Each one has his own pet method of eliciting this. It is better to acquiant ourself with one or two such. Getting up a stool of definite height a fixed numberof times, climbing up the stairs, walking, running may all be adopted to ones need I use rising on the haunches 3—20 times as the test, the number depending on the weight, the condition, and the previous athletic record of the patient. The average adult with a rate of 75 will go up to 100 on 10 such movements and will return to normal or less in ½—3/4 minutes on rest. Nervous tachycardia shows a reduction in rate in the 1st 15 seconds after exercise. No exercise is to be permitted in which the pulse does not come back to the original number in 3 minutes after rest.

Dyspnœa is not so common in the young as in the older 'bogus' cardiac disease. The weight, physical fitness and previous training have all to be taken into consideration in assessing

this symptom. Entraneous conditions like fat and emphysema are factors which produce dyspnoea. In young peope it is often associated with effort syndrome. Though the heart is sound there is very little cardiac reserve. It is part of their make-up and to use a military expression they possess C class hearts. In older people care chould be taken to apportion the relative causation whether to a chronic bronchitis and an emphysema or to myocardial weakness, intrinsic or as a result of fatty infiltration. In some cases of clinically mild influenza dyspnoea out of proportion to the illness have been noticed during the convalescence and later. In these cases the first sound is relatively weaker than normal, exercise response is poor and in electro cardiograms a depression or inversion of the T wave has been found, returning to normal on recuperation of the health. How much of the effect on the T is due to the myocardial lesion and how much is it due to the routine administration of digitalis one sees usually, can only be gauged by the history and other records.

Cardiac pain.—Many people complain about cardiac pain and unfortunately we have to assess its value purely on the patient's statement. Exaggerations and distortions are naturally most frequent with regard to this symptom. I have had the best text book descriptions of anginal radiation from non-cardiac cases.

The association of cardiac pain with angina and sudden death probably accounts for the interest of the layman in this subject. True cardiac pain is of important bearing in diagnosis. Circumstances which provoke it, which increase it, the location of origin, extent and direction of radiation have all to be considered and enquired into in detail. In no part of cardiac anamnesis could it be said that too much time has been spent. True cardiac pain comes always with increased heart load, is aggravated by exertion and is relieved by rest. It is a protective reflex. The amount of exertion necessary to produce the pain depends on various factors like food, wind, cold, etc. It is now generally accepted that true cardiac pain is the result of deficient coronary circulation. It is substernal and rarely truly precordial. The impression is that it always radiates to the left. Many cases do not show this radiation. Acute tenderness on pressure over the lower half of the sternum is often the only sign. In the non-cardiac type the pain is invariably submammary, has no relation to exertion, may come on at any time in the day or night and is transient in duration. The sounds are normal and in some cases accentuated. The beat is forceful. It is said that it is found mostly in women but I have seen it with equal frequency in both sexes. Neurotic persons of a high introspective temperament are the victims. Often a sexual underlying factor is present. A feeling of ache over the precordium or better still in the heart itself is complained of by some people when fatigued. It is not associated with exertion. Rheumatic myositis has also to be considered in relation to precordial pain. Acute tenderness on pressure is elicited in such cases.

Heart attacks.—A great many things give rise to such. The so called cardiac asthma, coronary thrombosis and angina are the common examples. Dizziness and in some cases faintness suggest heart disease. Excepting in marked aortic regurgitation and Stoke-Adams syndrome, fainting is hardly caused by heart disease. A vagus predominance is the root cause of such attacks ; well marked sinus arrhythmia may be found in such cases. Sir Thomas Lewis observed fainting on withdrawal of blood in a number of soldiers, the sight of blood rather than

the pain of the prick providing the reflex stimulus. Fall in the heart rate with a simultaneous fall in the systolic pressure were noticed in these cases. Bramwell quotes the case of a school girl in whom fainting fits occurred during menstrual periods. The heart and other organs were sound. The syncopal attacks were often preceded by nausea and were evidently due to vagotonia, the heart itself being sound. An injection of atropin or adrenalin raises the rate and increases the blood pressure with beneficient results in such cases.

Consciousness of the heart beat.—Trouble some people and one often sees them in a cardiac clinic—simple palpitation, extra systoles and auricular fibrillation are the common causes. In otherwise healthy individuals extra systoles form the commonest cause. Gastrointestinal disturbances, entraneous toxins like tobacco or coffee often account for them and with the elimination of these they disappear. In the healthy individuals the extra systoles occur only when the heart beat is slow. It is only when associated with severe myocardial disease or with digitalis poisoning they need be considered as of pathological significance.

I have dealt here only with a few of the problems that confront the cardiologist. I have purposely omitted to deal with obvious cardiac conditions. I wish only to add that the diagnosis of cardiac disease should not be taken lightly and in doubtful cases full use of the ancillary methods of examination, the X-rays preferably by direct screening, the electro-cardiograph and the biochemical aids, should be utilised before a final verdict is given; further in the case of sensitive and introspective persons the use of "therapeutic measures" which tend to direct the attention of the patient to the heart are definitely harmful and should be studiously avoided."

Hieronymus Fabricius ab Aquapendente.

For out of old feldes, as men seith,
Cometh al this new corn fro yere to yere;
And out of old bokes, in good feith,
Cometh al this new science that men lere.

—CHAUCER.

When Adam's spare rib, the vertebra "Luz (so valuable at the Resurrection) and other scholastic bones were live topics of early sixteenth century medicine, along came young Doctor Vesalius, prosector of the University of Padua, and scornfully swept them aside. The typical instructor of that day, in long robe and biretta, wand in hand, seated in his pulpit- chair, had been expounding Galen by the book while below him the barber made a dutiful attempt to demonstrate the viscera of the subject before him. Vesalius changed all that, substituting first-hand knowledge, recognition of palpable tissues by educated touch, practice of dissection *in situ*. Medicine thereupon turned away from Galen, and modern anatomy began. What an uproar there was, though, when in 1543 Vesalius published his *De Fabrica Humani Corporis*! He was but twenty eight years old. Sylvius, his old teacher at Paris, turned against his brilliant pupil with coarse absue; his own pupil, Columbus, derided him; some joined a conspiracy of silence; others, at the hint of the authorities, spread covert. Open attack Vesalius sturdily met, but against steath he had no weapon, and in a fit of anger he flounced out of Padua and went to Spain to accept a lucrative post as physician to the Emperor Charles V, who was eating and drinking himself to death. What fate might have befallen Vesalius if he had not left Padua, given up research and renounced anatomy, may be inferred from the fate of Dr. Miguel

Servet, called Servetus, the great Spanish surgeon who discovered the heretical passage of the blood through the heart after mixing with air in the lungs, and recorded the fact in his *Restitutio Christianismi* along with some theology which an unbalanced Frenchman by the name of Jean Calvin quibbled into a heresy sufficient to deserve the stake, at which he gleefully burned Servetus and his book.

At Padua, meanwhile, the ideas of Vesalius were being sustained by his pupil Fallopius, who expounded the new doctrine with vigor but with a a tact that saved him from serious assault. At Rome, however, another brilliant discoverer, Eustachius, opposed Vesalius; for though Vesalius was personally out of the controversy, his great book *De Fabrica* was still dealing roughly with the old superstitions. It is not strange that so clever a man as Eustachius did not see the merit of the New Anatomy; such blindness is now and then illustrated in the profession to day, through less strikingly.

Fallopius, while bravely upholding his former master, was in his turn blessed with a devoted pupil, Geronimo Fabrizio—later to be Latinized as Hieronymus Fabricius—a native of Aquapendente, a little town in the Appennines. Let us glance at some of the starting events that occurred while he was still a boy, born in 1537. One of these was the hullaballoo over Vesalius and his *De Fabrica*. Fabricius was then six years old.

By a curious coiucidence, it was in the same year of 1543, and in the same week of May, that the mighty Copernican heresy was published, in *De Revolutionibus Orbium Cœlestium*, wherein Copernicus described the revolution of the planets around the sun. Thus, within seven days of each other, Galen and Ptolemy became back numbers, and both medicine and astronomy began a new chapter. Copernicus fared better, personally, than perhaps any other dangerous heretic, for he did not live to hear any scientific criticism of *De Revolutionibus*, let alone hear the thunder of the Church. He was on his death bed when his book came from the press, and it is pleasant to believe the story that the first copy was placed in his hands while he was still in command of his faculties. Blessed by the consciousness of success, he breathed his last a few hours later, dying of intestinal infection and not Pro Hæretico Comburendo.

What else happened in astronomy is another story, but those were certainly great days in medicine, particularly anatomy and surgery. Closely following the *De Fabrica Humani Corporis* of Vesalius came, in 1545, the epochmaking work of Ambroise Pare, a French army surgeon, whose name should be blessed by every wounded soldier and civilian. Pare stopped the use of boiling oil as a dressing, and abated many other terrific practices which he had abundantly witnessed during his long service in the armies of King Francis I, the implacable foe of Charles V, whom Vesalius at that time was trying to save from a more formidable enemy, gluttony. Pare's methods are set forth in that great work, *Treatment of wounds made by arquebuses and other firearms and also by gunpowder burns*, an important contribution to surgery but only one of the many we owe to Pare, including his *Epitome* of the *Fobrica* of Vesalius, which made the work accessible to all surgeons.

A year later, in 1546, appeared Fracastro's *De Contagione*, in which the modern theory of infection by microorganisms is stated with wonderful chairvoyance. In short,

medical advance was rapid in the middle of the sixteenth century, in spite of stiff opposition by State and Church and from within the profession itself. Medicine had not long been regarded as a profession, at least a respectable one, as shown in a decree of Charles V in 1548 in which surgery is declared to be honourable. This may have meant much to average medical men, but the real researchers had not to wait to be told they were no longer outcasts from good society in the Holy Roman Empire; they had gone right on as if Charles were merely King of Castile. And they went on rapidly. We can glance but hurriedly at a few items.

In 1550 Höllerius prescribed spectacles for myopia. In 1552 John Caius of St. Bartholomew's London, published his work on the sweating sickness. In the following year Servetus was burned, but not until he had made extraordinary contributions to anatomy. Friederich published his first tract on alcoholism in 1553; soon afterward Lange described chlorosis; Jacob Ruoff's *De Conceptu* came in 1554, and a year later Pierre Franco performed suprapubic lithotomy; in 1558 Cornaro published his treatise on personal hygiene; Columbus in 1559 described pulmonary circulation; Stromeyer's treatise on ophthalmia appeared; then came Maurolycus with his studies of myopia, hypermetropia, and the optics of the lens; this was in 1560, the year Francis Bacon was born! the following year, 1561, was marked by the great Pare's work on orthopedics, Franco's on hernia, and Fallopius published his celebrated *Observationes Anatomicae.*

All historians agree that Fallopius took a great interest in his pupils and spared no pains to advance them. He soon formed a high opinion of young Fabricius and warm attachment grew up between them. The young man matriculated, as we have seen, at a time of great mental activity in Europe, when a brilliant mind could not but be about some work, when the very air bore epidemic rumors that strung men to investigation. In every direction blew the incitement: over science, art, politics, religion; it had roused the proceeding generation, and was to continue, in spite of Church and State and other vicissitudes, down to the present with increasing momentum. While Fabricius was studying under Fallopius at Padua, Tasso was writing the *Gerusalmme' Liberata*; Michel Angelo was planning the donee of St. Peter's; Benvenuto Cellini was working exquisitely in metal and stone and writing his inimitable autobiography; Palestrina was beginning modern music; Fuchs was devising a new botanical nomenclature; the momentous Council of Trent was in session; the Regius Professorship of Physic was endowed at Cambridge; in far Peru the University of Lima was founded; Elizabeth's reign began; the unrecorded youth of Cervantes was on its way to glory; at Lepanto Galileo was soon to be born, and in the same year, Shakespeare. Great days! And Fabricius was of them.

His university, that of Padua, was groverned by the student body, who even elected the faculty, whereas Cambridge, Oxford, Paris, and others of their type were controlled by the masters of arts. At Padua there were two separate corporations, each a university in the early sense; the corporations were called Universitas Juristorum and Universitas Artistorum, the later including the faculties of divinity, philosophy, and medicine (not a bad juxtaposition, on second thought). During the medical session whole human body was twice dissected in public by professors of anatomy; day was breaking when some of the lectures began and most of them were

concluded by eight o'clock; Fabricius, when he became a professor, lectured at the more reasonable hour of nine.

Fallopius was but fourteen years older than Fabricius, and the two were fast friends, constantly together. After brilliantly passing his final examinations receiving his doctoral hat, Fabricius often substituted as lecturer while Fallopius visited patients at a distance. This friendship and collaboration was prematurely ended in 1562 by the death of Fallopius at the age of thirty-nine. Three years later the republic awarded the chair of anatomy and surgery to Fabricius, in his twenty-eighth year. For nine years he did not lecture, but limited himself to dissecting and operating before his classes. He was not alone in improving the methods of teaching; Oddi and Botoni, of the St. Francis Hospital at Padua, had already in 1558 made the first attempt in Europe at real clinical teaching; but Fabricius was to accelerate this advance. He built, with his own means, an anatomical theater, in which a hundred and fifty years later the great pathologist Morgagni worked; it gave place to a finer one erected by the Venetian Republic, which still stands; the seats are black with age, rising steeply in a semicircle; no daylight enters, the demonstrations were lighted by candles; over the entrance is an inscription commemorating the generosity of Fabricius in erecting the superseded building.

Fabricius had a large practice and drew, besides, from the Venetian Senate a salary of a thousand scudi, together with the right to wear a robe of purple and gold and the gold collar of the knightly Order of St. Mark; he was granted precedence over all other professors of the medical faculty. Like his master Fallopius, he was eager to serve his pupils and was loved for his kindness as well as admired for his accomplishments; many men not connected with the university were devotedly attached to him. His high reputation for eloquence and for general and professional knowledge attracted students to Padua from all parts of the civilized world; Padua in several of its faculties was at that time the most famous of universities.

Of comparative anatomy Fabricius was a most laborious student; from its standpoint he treated the eye, larynx, veins, ear, and intestinal canal, the development of the fetus, and many other subjects. The improvements which his knowledge of anatomy enabled him to introduce into the practice of surgery were many and important, and his *Opera Chirurgica* (1617), which embraced every complaint curable by manual operation, passed through seventeen editions. His long career as a professor, fifty-four years, was a rich asset to Padua and the world of science. Many brilliant men began as his pupils. Cassserius was one; his *Tabula Anatomica* comprise Correggio-like copper plates in which scientific accuracy and artistic perfection are wonderfully united; Doctor Holmes called them "eviscerated beauties." Another pupil was Caspar Bauhin, who later went to Basel as Professor; his work in anatomy and botany are famous and his discoveries were many; he was a well-known gynecologist and he gave the first correct description of the appendix vermiformis.

But most brilliant of all was a young Englishman named Willam Harvey, who at the age of twenty-two became of Padua a pupil of Fabricius and Casserius, studying there from 1599 to 1603. The same interest that Fallopius had taken in Fabricius the latter in turn displayed toward Harvey, who in the later life referred affectionately to his teacher as "a most skillful anatomist and venerable old man." To what extent Harvey was inspired by

his teacher is shown by D'Arcy Power in his charming biography in *Masters of Medicine*: "Indeed, when we look at Harvey's work, much of it appears to be a continuation and amplification of that done by Fabricius. Both were intensely interested in the phenomena of development; both wrote upon the structure and function of the skin; both studied the anatomy of the heart, lungs, and blood vessels; both wrote a treatise *De Motu Locali*." The world has heard much of the status of Harvey's *De Motu Cordis*, but the training Harvey got in Padua may have determined his zest for demonstration. The importance of Harvey's work is not so much in the discovery of the circulation of the blood as in its quantitative or mathematical demonstration. With this start, physiology became a dynamic science, and it was at Padua that Harvey's attentiin was first directed to purely mechanical explanations of vital phenomena.

II

Let us now examine the above. It is a collection of five works by Fabricius, but there is no general title page to that effect; only on the back of the volume is this indicated, where we read: *De Formato Foetu et aliapuscula*. It is a folio, about 11½ by 16½ inches, beautifully printed in large type, with very wide margins, on excellent paper; the initials and end-pieces are well-executed woodcuts, and the great value of the volume is in the exquisitely engraved copper plates with which the several works are profusely illustrated; all of these are full page plates except a number which are double page. On the second fly leaf is pasted the title page of the first edition, printed at Venice by Bolzetta in 1600; there is no title page by the printer of the ensuing work. Perhaps there had been one which was removed in order to substitute the very beautifully designed and executed Venice title page. It reads: *Hieronymy Fabricii ab Aquapendente De Formato Foetu. Venetiis. Per Franciscum Bolzettam.* 1600. The colophone, however, indicates the Paduan printer and date: *Patavii. Ex Typographia Laurentii Pasquati, Impress. Alma Universitatis Juristarum. Anno Domini MDCIV.* Lorenzo Posquati is also the printer of the next work in the volume: *De Venarum Osteolis.* This work is dated 1603; on the title page the author's name is qualified with "Anatomici Patavini"; that is, Professor of Anatomy at the University of Padua. There is no colophon. The third work in the volume, on the embryology of birds, is entitled: *Hieronymi Fabrici ab Aquapendente olim anatomici ,Patavini celeberrimi De Formatione Ovi et Pulli tractatus accuratissimus ad Illustris. & Reverendis. D.D. Carolum Mediceum S. R. E Cardinalem Amplissimum. Patavii ex officina Aloysii Bencii Bibliopola.* 1621. The "olim" and "celeberrimi" and the date remind us that Fabricius had died in 1619 and that this work is posthumous. The dedication to the Cardinal is written by Joannes Prevotius of the Paduan faculty of medicine. No colophon. The fourth work, a delightful essay on the speech of the lower animals, resumes the chronological order, and is entitled: *Hieronymi Fabrici ab Aquapendente Anatomici Patavini De Brutorum Loquela. Patavii, Ex Typographia Laurentii Pasquati. MDCIII.* There is a dedication by Joannes Ursimus, Ph. D., M. D., Padua, to the "Illustrissima Heroina Hedvigi Mielecks de Kormanice." The author is spoken of by Doctor Ursinus as (retaining the ablative of the sentence) "Doctissimo Viro, Academiæ quidem Patavinæ Supraordinario Medico & Chirurgo, Anatomes vero singulari & incomparbili Professore, Hieronymo Fabricio ab Aquapendente." Why Doctor Ursinus instead of the author offered the work

to the heroic Polish lady does not appear, but there is mention of the mutual admiration of the two. Let us hope romance is hidden in it. The fifth and last work included in this volume is an inquiry into the physiology of human speech. It is from the same press and of the same date as the fourth. The title page shows that the work was edited by Doctor Ursinus in 1601, from which we may infer that the same editorship was true of the preceding work. The title reads: *Hieronymi Fabrici ab Aquapendente Philosophi ac Medici in Florentissimo Gymnasio Patavino Anatomes et Chirurgia Professoris Publici Singularis et Supraordinarii De Locutione et eius Instrumentis.* Here again is a dedication by the editor, to a young Polish noble, Thomas Zamoyski. Between the dedication and the body of the work, contrary to custom, the index occurs. Following the text is a beautiful engraving of a dissection of the organs of speech; the opposite page, containing the explanation of the dissection, is pasted to the fly leaf corresponding to the one on which the title of the first work in the volume is pasted.

Returning to this first work, *De Formato Faetu*, it is seen to be righty placed first; it occupies nearly half of the volume (152 of the 328 pages) and originally appeared perior to the other contents, though the edition here is subsequent to the second, fourth, and fifth work in the volume. As to its value in medical history, I shall quote from an article by Dr. Joseph Grindon of St. Louis, a charming review of the life and writings of Fabricius, in the *Interstate Medical Journal* for August, 1906; Doctor Grindon's article does not mention the book we are concerned with, but one printed at Leipsic in 16?7, a volume of the Opera Omnia of our author, which happens to contain some of the items in the one before us, beginning as it does with *De Formatione Ovi et Pulli*, followed by *De Formato Fœtu*, of which Doctor Grindon says:

"The author draws largely on the opinions and work of his predecessors, fortified and illustrated by his numerous researches bearing upon the comparative anatomy of gestation. This folio contains thirty-three full-page plates figuring pregnancy in man, the sheep, cow, horse, swine, dog, rat, mouse, guinea-pig (thus early a contributor to science), the shark and the serpent. In fact, it is on this work, together with his observations on the valves of the viens, that Fabricius' chief claim to the admiration of posterity must rest. It is not extraordinary that he should defend certain errors. Thus he maintains that the vessels of the placenta communicate with those of the uterus, although Arantius had proved the contrary some years before. According to him, man has no allantois. It was generally believed at that time that the amnionic fluid was urine, some holding that it escaped by the urethra, although the prevailing opinion was that it passed along the urachus and umbilical cord, spread out between the chorion and amnion, and filtered out through the latter. Fabricius declares that it passes out in this manner to the chorion. However, he holds that the urachus does not consist of a single tube, but of a bundle of minute hollow fibres."

Charles Singer, lecturer on the history of medicine at the University of London, in his *Evolution of Anatomy*—a valuable and entertaining book—says of *De Formato Fœtu*:

"This is a magnificent comparative study of the embryo in the more advanced state, and is the first work of its kind. It describes developmental stages in a long series of animals; man, rabbit, guinea pig, mouse,

dog, cat, sheep, pig, horse, ox, goat, and deer among mammals; the smooth dog-fish among fishes; and the viper among other creatures. In the figures a good deal of attention is given to the heart and the ductus arteriosus and the foramen ovale are frequently shown. In the text special attention is drawn to the structural changes in the vascular system incident on birth. The work contains the best figures up to its time of the human gravid uterus and membranes and of the human placenta. It includes a series of fine demonstrations of the course and relations of the umbilical vessels, and dissections of various parts of the human fetus. Even more detailed is the investigation of the uterus, placenta, membranes, vessels, and fetus of the sheep. The book also contains the earliest figure of the heart of a fish."

It is illuminating to reread the brilliant review of embryology by Dr. A. W. Meyer of Standford University, published in CALIFORNIA AND WESTERN MEDICINE in the eight issues from December 1931 to July 1932, in which are serval references to Fabricius and specifically to *De Formato Foetu.* Doctor Meyer makes Fabricius' place in the history of medicine quite clear, especially what Harvey owed him in his study not only of the circulation of the blood but even more of embryology. It is fascinating to read Doctor Meyer's explanation of the theories that in turn were accepted, and in doing so we learn much about Fabricius. A brief extract must serve here:

"Fabricius, whom Singer regards as 'the effective founder of modern embryology,' had expressed the opinion that most animals come from ova . . . and held that the cholzæ do not represent the sperm of the cock but take part in the formation of the embryo. . . . 'The foetus of animals,' he declared, 'is engendered in one case from an ovum, in another from the seminal fluid, in a third from putrefaction or by the spontaneous act of nature, automatically.' Nevertheless Fabricius described the fetal membranes and apparently saw and described the ovarian vesicles."

Doctor Meyer quotes Willis, who "declared that Harvey wrote his treatise on generation 'in the harness of Aristoteles' and 'with the bit of Fabricius in his teeth.'"

With these few hints of the historical importance of *De Formato Fœtu*, we must pass to the second work in our volume: *De Venarum Ostiolis*, of which Professor Singer says:

"Perhaps the best known work of Fabricius is that *On the Valves of the Veins*. It had much influence on Harvey, who borrowed figures from it and based much of his argument concerning the circulation of the blood on the action of these valves. Fabricius' excellent figures of the valves in the veins are the first in literature. He explored them better than anyone before his time, and they have often been regarded as his discovery. Nevertheless he had not the least inkling of the function of the valves, and regarded them as slowing the flow of blood towards the periphery and thus preventing blood from collecting at the extremities."

In the article already quoted Doctor Grindon observes:

"Although Fernel, Sylvius (abua-1555), Amatus Lusitanus, and Cannot nus (in 1547) had written of valves in the veins [also Vesalius, we may add]: their descriptions were vague and left much to be desired. Sylvius, indeed, does not seem to have considered them normal and constant structures. Eustachius and Fallopius had denied their existence.

"Fabricius presents the subject in clear and unmistakable fashion. Seven full-page plates depict these ostiola or little doors in various veins. He arrogates to himself the full credit for the discovery, expressing his surprise that no ancient nor modern anatomist should ever have seen the valves until 1574, when he first beheld them *summa cum latitia.* Yet he could hardly have ignored the work of those who preceded him, since his preceptor, Fallopius, had written on the subject, criticising them."

No one, however, appears to have offered a rational conjecture on the use of the valves or to have traced them through the venous system at large until Fabricius demonstrated their presence in all the veins of the extremities. But he thought they had a subsidiary office in connection with the collateral circulation, supposing that they diverted the blood into branches near the valves. Thus he missed seeing the importance of the anatomical and experimental facts gathered by himself, although he correctly described, and showed in beautifully executed engravings, the direction in which the valves open. To continue in Doctor Grindon's words:

"Fabricius never took the next and, as it seems to us, obvious step: the discovery of the fact that the blood in the veins flows towards the heart. This was left for the more logical mind of his great pupil of undying memory. On the contrary, he explains the use of the valves [aside from the diversion function above mentioned] by saying that they check the excessive torrent of flow towards the extremities and thus prevent their congestion. The latter statement contains a germ of truth, but not as he understood it."

At the time when Harvey was studying at Padua under Fabricius the general notions as to the circulation may be briefly summed up as follows: The blood ebbed and flowed to and from the heart in the arteries and veins. From the right side at least a portion of it passed to the left side through the vessels in the lungs, where it was mixed with air. Lastly, there were two kinds of blood There was the venous blood, formed originally in the liver, thence passing to the heart, from which it went out to the periphery by the veins, and returned ("ebbed") by them to the heart. Second, there was the arterial blood, containing "spirits" produced by the mixing of the blood with the air in the lungs. The blood was then sent out from the heart to the body, and returned to the heart by the same vessels. The pulmonary circulation was understood so far as above described, but its relation to the systemic circulation was unknown. The action of the heart as a propulsive organ was not recognized. It was not until 1628 that Harvey announced his views to the world by publishing his treatise *De Motu Cordis et Sanguinis.* His conclusions are given in the following celebrated passage:

"And now I may be allowed to give in brief my view of the circulation of the blood, and to propose it for general adoption. Since all things, both argument and ocular demonstration, show that the blood passes through the lungs and heart by the auricles and ventricles, and is sent for distribution to all parts of the body, where its makes its way into the viens and pores of the flesh, and then flows by the veins from the circumference on every side to the centre, from lesser to the greater veins, and is by them finally discharged into the vena cava and right auricle of the heart, and this

in such a quantity, or in such a flux and reflux, thither by the arteries, hither by the veins, as cannot possibly be supplied by the ingestor, and is much greater than can be required for mere purposes of nutrition, it is absolutely necessary to conclude that the blood in the animal body is impelled in a *circle*, and is in a state of ceaseless motion; that this the act or function which the heart performs by means of its pulse; and that it is the sole and only end of the motion and contraction of the heart." (Book X, ch. xiv, p. 68.)

The only figures included by Harvey in his great book were taken from his master's *De Venarum Ostiolis.*

—*California and Western Medicine.*

ASSOCIATION NOTES.

Godavari Medical Association.

A meeting of the Godavari District Medical Association, Cocanada, was held on the 10th instant at Polavaram. About 22 doctors from all over the district converged at Rajahmundry and sailed by launch up the river Godavari. Dr. K. Jaggarao, assisted by the neighbouring doctors of the Agency, entertained the guests at a tea party. The meeting then commenced at 6 30 p.m. A number of interesting cases of the so-called "Koya disease" were exhibited. Case notes were read by Dr. P. Audinarayanaswami of Cocanada Headquarters Hospital. Major T. S. Sastri, I. M. S., delivered a clinical lecture on retension of urine and diarrhœa. The meeting came to a close at 9 p. m.

FOR THE COMING CAMPAIGN.

BE PREPARED.

Effective organisation alone can enable a profession to make its voice felt.

We hope that ere long every private medical practitioner will join the ranks of the UNION.

STRENGTHEN THE UNION.

If you are not already a member become one.

If you are, insist on your friends becoming so.